



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,899	07/09/2003	Seong Soo Jang	CU-3282 RJS	9848

26530 7590 09/23/2005

LADAS & PARRY LLP  
224 SOUTH MICHIGAN AVENUE  
SUITE 1600  
CHICAGO, IL 60604

EXAMINER
----------

KORNAKOV, MICHAEL

ART UNIT	PAPER NUMBER
----------	--------------

1746

DATE MAILED: 09/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

15 ✓

## Office Action Summary

Application No.

10/615,899

Applicant(s)

JANG ET AL.

Examiner

Michael Kornakov

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 08/11/2003.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1, 6 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for use of **plasma** to etch a surface of a wafer or to deposit materials on the surface of the wafer utilizing etching gases containing chlorine, such as  $\text{Cl}_2$ ,  $\text{BCl}_3$  or the like and the deposition gases, such as  $\text{TiCl}_4$ ,  $\text{TaCl}_5$  or the like does not reasonably provide enablement for preparing a reaction unit utilizing chlorine series gas under any other condition. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recited in claims 1 and 6 "preparing a reaction (etching or deposition) unit using chlorine series gas" constitutes an indefinite subject matter, because it is not clear what the term "preparing" is stands for. It is not clear, whether the chamber

Art Unit: 1746

cleaning/seasoning step or a semiconductor processing step with chlorine series gases preceding the chamber cleaning is indicated.

The recited in claims 1 and 6 "at least one of hydrogen and nitrogen" is indefinite, because it is not clear whether the hydrogen and nitrogen gases or hydrogen and nitrogen containing gases for igniting the plasma are indicated or the hydrogen and nitrogen plasma species are recited.

Appropriate clarification and/or correction is required. Claims 2-5, 7-10 are rejected because of their dependency and failure to remove the ambiguity of parent claims.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Ameen et al (U.S. 6,635,569).

Ameen teaches a method of stabilizing CVD process chamber comprising the steps of treating the process chamber with of chlorine-containing gas and exposing the components of the chamber to a plasma formed in a mixture of argon, hydrogen and

Art Unit: 1746

ammonia gases, wherein the contents of hydrogen containing gas, nitrogen containing gas and argon gas in the gaseous mixture correspond to the claimed parameters (paragraph, bridging col.8 and 9; col.10, lines 20-66; col.11, lines 1-35).

7. Claims 1,3,6,8 are rejected under 35 U.S.C. 102(e) as being anticipated by Moon et al (U.S. 2004/0013818).

Moon teaches a method of cleaning a CVD chamber comprising the steps of treating the chamber with chlorine gas and treating the chamber with plasma produced from a gaseous mixture of hydrogen gas and nitrogen gas or ammonia gas [0003,0018,0019,0021,0038,0043,0045,0052,0053,0055].

### ***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2,4,5,7,9,10 rejected under 35 U.S.C. 103(a) as being unpatentable over Moon et al (U.S. 2004/0013818) in view of Ameen et al (U.S. 6,635,569).

While indicating that argon is used as plasma ignition gas [0038], Moon remains silent about argon content, as specified in the instant claims. However, the recited argon content is utilized in the art for maintaining plasma while treating CVD chambers with gaseous mixtures identical to the instantly claimed. Thus, Ameen teaches similar method of treatment a CVD chamber, utilizing plasma produced from hydrogen and nitrogen gaseous ingredients identical to those of Moon and wherein argon is added to the gaseous mixture in the amount to provide the stable plasma processing. Therefore, one skilled in the art motivated by Moon and Ameen would have found obvious to utilize argon in proportion suggested by Ameen in order to stabilize plasma while treating CVD chamber as per teaching of Moon and thus to arrive at the limitations as instantly claimed.

Art Unit: 1746

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Kornakov whose telephone number is (571) 272-1303. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Michael Kornakov  
Primary Examiner  
Art Unit 1746

09/18/2005